

**DESCRIPTION**

The AM50N06A is available in TO-252 Package.

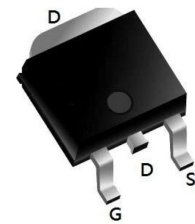
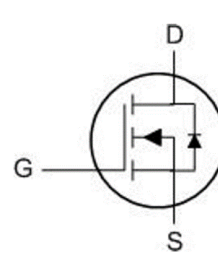
VDS	RDS(on)	ID
60V	12mΩ	50A

FEATURE

- Super Low Gate Charge
- Excellent CdV/dt effect decline
- Advanced high cell density Trench technology

ORDERING INFORMATION

Package Type		Part Number	
TO-252 SPQ: 2,500pcs/Reel	D	AM50N06ADR	
		AM50N06ADVR	
Note	R: Tape & Reel V: Halogen free Package		
AiT provides all RoHS products			

PIN DESCRIPTION**TO-252**

Pin#	Symbol	Function
1	G	Gate
2, 4	D	Drain
3	S	Source

ABSOLUTE MAXIMUM RATINGS

V _{DS} , Drain-Source Voltage		60V
V _{GS} , Gate-Source Voltage		±20V
I _D , Continuous Drain Current, V _{GS} @ 10V ⁽¹⁾	T _C =25°C	50A
	T _C =100°C	30A
	T _A =25°C	9.20A
	T _A =70°C	7.50A
I _{DM} ⁽²⁾ , Pulsed Drain Current		100A
EAS ⁽³⁾ , Single Pulse Avalanche Energy		72.2mJ
I _{AS} , Avalanche Current		38A
P _D ⁽⁴⁾ , Total Power Dissipation	T _C =25°C	52W
	T _A =25°C	2W
T _{STG} , Storage Temperature Range		-55°C~+150°C
T _J , Operating Junction Temperature Range		-55°C~+150°C
R _{θJA} ⁽¹⁾ , Thermal Resistance Junction-Ambient		62°C/W
R _{θJC} ⁽¹⁾ , Thermal Resistance Junction-Case		2.4°C/W

Stresses above may cause permanent damage to the device. These are stress ratings only and functional operation of the device at these or any other conditions beyond those indicated in the Electrical Characteristics are not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

(1) The data tested by surface mounted on a 1 inch² FR-4 board with 20Z copper.

(2) The data tested by pulsed, pulse width≤300us, duty cycle≤2%

(3) The EAS data shows Max. rating. The test condition is V_{DD}=25V, V_{GS}=10V, L=0.1mH, I_{AS}=38A

(4) The power dissipation is limited by 150°C junction temperature



ELECTRICAL CHARACTERISTICS

T_J=25°C, unless otherwise noted.

Parameter	Symbol	Conditions	Min	Typ.	Max	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V, I _D =250μA	60	-	-	V
BV _{DSS} Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	Reference to 25°C, I _D =1mA	-	0.052	-	V/°C
Static Drain-Source On-Resistance	R _{DS(ON)}	V _{GS} =10V, I _D =5A	-	-	12	mΩ
		V _{GS} =4.5V, I _D =8A	-	-	15	
Gate Threshold Voltage	V _{GS (th)}	V _{GS} =V _{DS} , I _D =250uA	1.20	-	2.50	V
V _{GS (th)} Temperature Coefficient	$\Delta V_{GS (th)}$		-	-5.76	-	mV/°C
Drain-Current Leakage Voltage	I _{DSS}	V _{DS} = 48V, V _{GS} =0V, T _J =25°C	-	-	1	μA
		V _{DS} = 48V, V _{GS} =0V, T _J =55°C	-	-	5	
Gate-Source Leakage Current	I _{GSS}	V _{GS} =±20V, V _{DS} = 0V	-	-	±100	nA
Forward Transconductance	g _{fs}	V _{DS} =5V, I _D =30A	-	42	-	S
Gate Resistance	R _g	V _{DS} =0V, V _{GS} =0V, f=1MHz	-	1.50	-	Ω
Total Gate Charge (4.5V)	Q _g	V _{DS} =48V, V _{GS} =4.5V I _D =15A	-	28.70	-	nC
Gate-Source Charge	Q _{gs}		-	10.50	-	
Gate-Drain Charge	Q _{gd}		-	9.90	-	
Turn-on Delay Time	T _{d(on)}	V _{DD} =30V, V _{GS} =10V R _G =3.3Ω, I _D =15A	-	10.40	-	ns
Rise Time	T _r		-	9.20	-	
Turn-Off Delay Time	T _{d(off)}		-	63	-	
Fall Time	T _f		-	4.80	-	
Input Capacitance	C _{iss}	V _{DS} =15V, V _{GS} =0V, f=1MHz	-	2100	-	pF
Output Capacitance	C _{oss}		-	210	-	
Reverse Transfer Capacitance	C _{rss}		-	146	-	
Diode Characteristics						
Continuous Source Current	I _S	V _G =V _D =0V, Force Current	-	-	47	A
Pulsed Source Current	I _{SM}		-	-	100	
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =1A,	-	-	1.20	V
Reverse Recovery Time	T _{rr}	I _F =15A, T _J =25°C	-	18	-	nS
Reverse Recovery Charge	Q _{rr}	dl/dt=100A/μs	-	14	-	nC



TYPICAL PERFORMANCE CHARACTERISTICS

Fig 1. Typical Output Characteristics

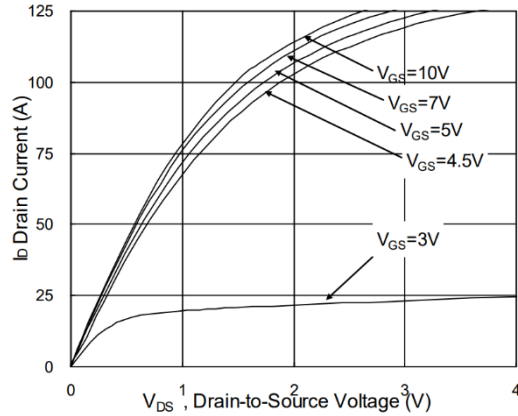


Fig 2. On-Resistance vs. Gate-Source Voltage

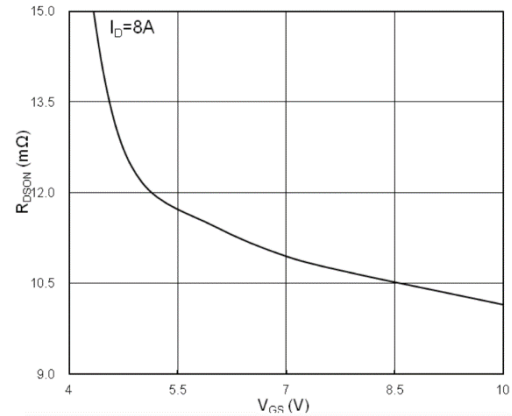


Fig 3. Forward Characteristics of Characteristics

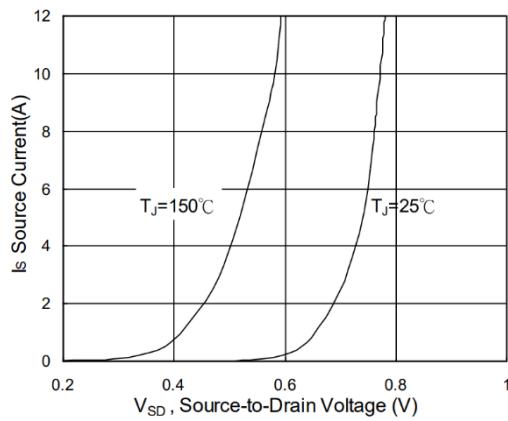


Fig 4. Gate-Charge Characteristics

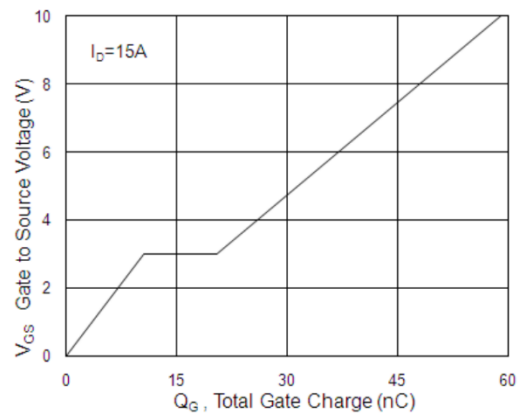


Fig 5. Normalized $V_{GS(th)}$ vs. T_J

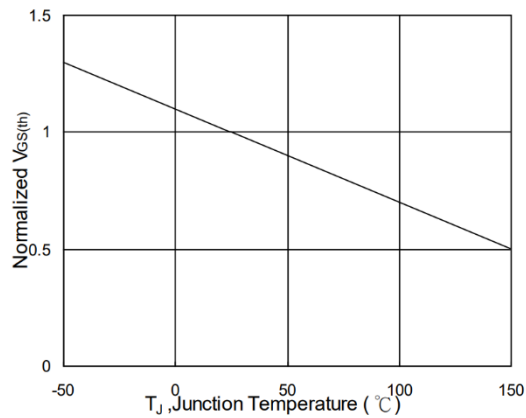


Fig 6. Normalized $R_{DS(on)}$ vs. T_J

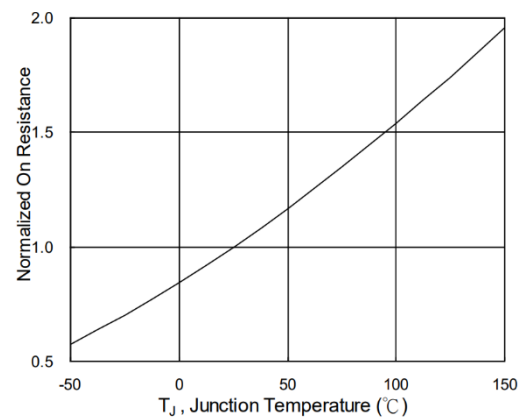




Fig 7. Capacitance

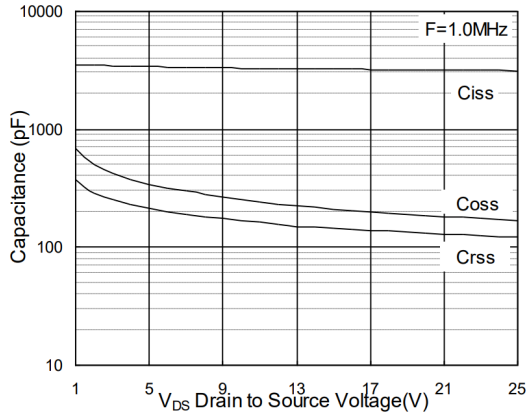


Fig 8. Safe Operating Area

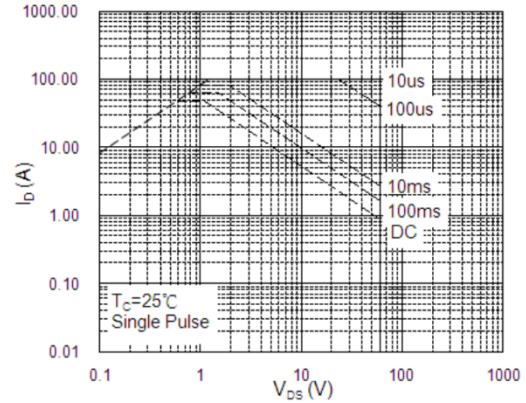


Fig 9. Normalized Maximum Transient Thermal Impedance

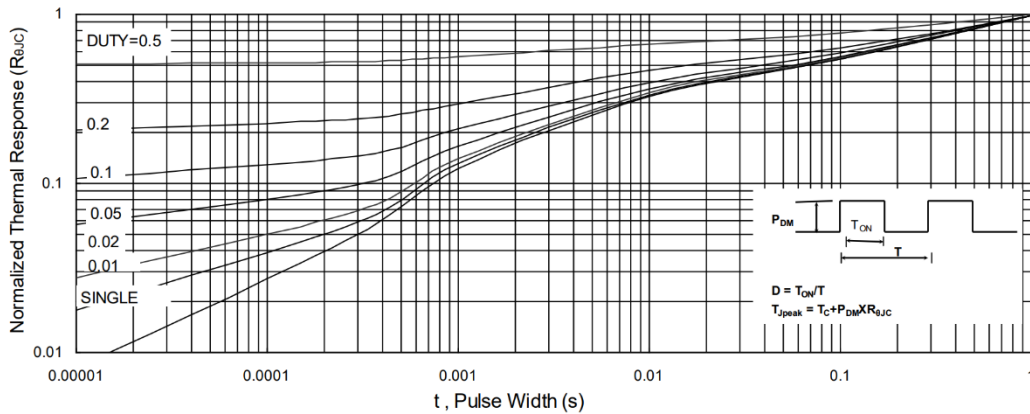


Fig 10. Switching Time Waveforms

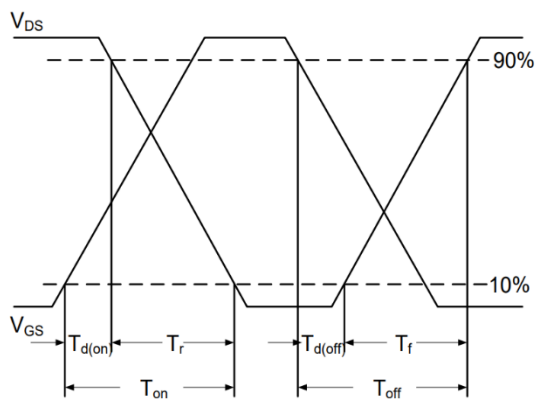
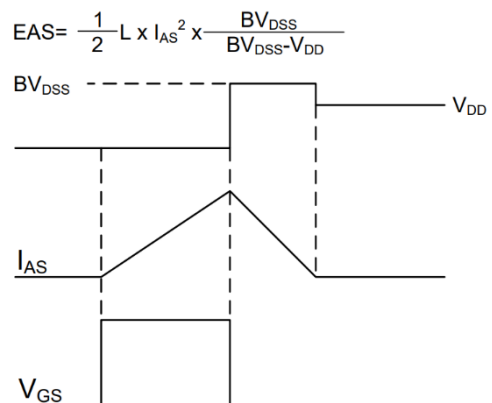


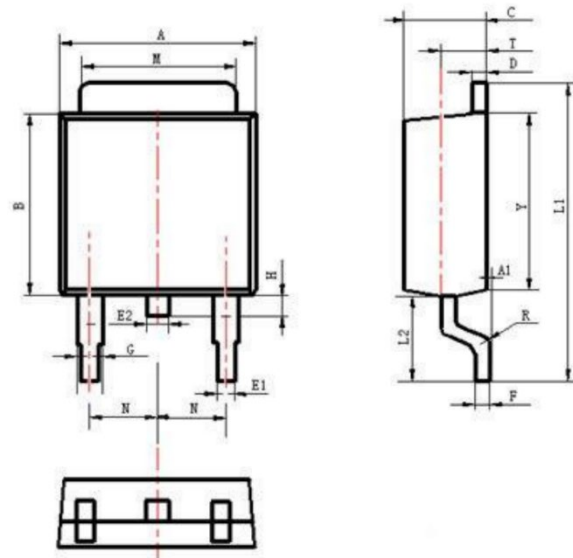
Fig 11. Unclamped Inductive Switching Waveform





PACKAGE INFORMATION

Dimension in TO-252 Package (Unit: mm)



Symbol	Values	
	Min.	Max.
A	6.300	6.900
A1	0.000	0.130
B	5.700	6.300
C	2.100	2.500
D	0.300	0.600
E1	0.600	0.900
E2	0.700	1.000
F	0.300	0.600
G	0.700	1.200
H	0.600	1.000
L1	9.600	10.500
L2	2.700	3.100
M	5.100	5.500
N	2.090	2.490
R	0.300	0.300
T	1.400	1.600
Y	5.100	6.300



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